

Appl. No. 10/707,361
Amdt. Dated June 8, 2006
Reply to Office Action of March 8, 2006

REMARKS

By the above amendments, Applicant has amended claims 1-3, 8, 12 and 14. No new matter has been entered. Claims 1-15 remain pending in the application.

1. Claim Rejections under 35 U.S.C. 101

In the Office action, claims 1-15 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-15 of copending Application No. 10/731,617. In response, Applicant advises that the copending Application No. 10/731,617 has now been abandoned. A copy of such abandonment request is attached herewith for reference. Therefore the rejections are now moot.

2. Specification Objection

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. Specifically, while claims 14 and 15 contain recitations to making an optical element in general, the specification is strictly limited to the forming of a light guide plate.

In response, Applicant has amended paragraphs [0016] and [0018] to provide the proper antecedent basis. No new matter is entered. Applicant submits that claims 14 and 15 are now fully supported by the amended specification, and that the objection is overcome.

3. Claim Rejections under 35 U.S.C. 112

Appl. No. 10/707,361
Amdt. Dated June 8, 2006
Reply to Office Action of March 8, 2006

In the Office action, claims 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In claim 12, "the molten methacrylate" technically lacks antecedent basis.

In response, Applicant has amended claim 12 by deleting the term "molten". It is submitted that the rejection is now overcome.

4. Claim Rejections under 35 U.S.C. 102(e)

Claims 1, 11, 12, 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Azuma (US 6,625,379).

In response, Applicant has amended claims 1, 12 and 14 in order to clarify the subject matter, patentably distinguish the invention, and correct certain informalities. Applicant submits that the claims 1, 11, 12, 14 and 15 are now novel and unobvious over the cited reference, as follows:

Claim 1, as amended, recites in part:

"...mixing an inert gas into the molten resin material, the inert gas being selected from the group consisting of noble gases and nitrogen gas..."

As stated by Examiner in the Office action, Azuma does not disclose that the gas mixed in the molten methacrylate resin is one of the noble gases recited in claim 2. According to Azuma, a method for producing a light-conducting plate comprises: melt-kneading a transparent resin in a cylinder while pressurizing the cylinder by feeding a carbonic acid gas therein under a pressure of from 1 to 15 Mpa... (see column 3, lines 3-5). The term "carbonic acid gas" means a gas having a carbon dioxide content of at least 50% by weight (see column 6, lines 66-67). Therefore, Azuma

Appl. No. 10/707,361

Amdt. Dated June 8, 2006

Reply to Office Action of March 8, 2006

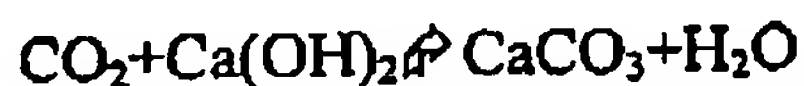
does not disclose such gas being either one of the noble gases or nitrogen gas. Therefore, amended claim 1 is novel over this reference.

In addition, Applicant submits amended claim 1 is unobvious over Azuma and the other cited reference (Yamaki et al - US 6,146,577), whether taken alone or in combination. Neither of the cited references, nor indeed their combination, provides any suggestion or motivation to employ an inert gas (selected from noble gases and nitrogen gas) for making a light guide plate.

According to Azuma and Yamaki et al, the gas mixed in the resin for forming a light guide plate is essentially carbon dioxide (CO₂). First of all, carbon dioxide is quite different from an inert gas both in terms of its chemical composition and in terms of its chemical properties. One of ordinary skill in the art would know that carbon dioxide does not belong to the class of gases known as inert gases. **"An inert gas is any gas that is not reactive under normal circumstances."** This definition can be found in a common dictionary or encyclopedic website such as the webpage on http://en.wikipedia.org/wiki/Inert_gas. Carbon dioxide is a reactive chemical compound quite unlike an inert gas. For example, carbon dioxide can be reacted with water in normal circumstances to produce carbonic acid:



Another example is that carbon dioxide can be reacted with calcium hydroxide in normal circumstances:



However, the inert gas (selected from noble gases and nitrogen gas) used in the method of amended claim 1 does not react with other materials in normal circumstances. It is chemically inactive in such circumstances.

That is, the carbon dioxide used in the cited references is a reactive gas

Appl. No. 10/707,361
Amdt. Dated June 8, 2006
Reply to Office Action of March 8, 2006

having properties quite different from those of the inert gas (selected from noble gases and nitrogen gas) used in the method of amended claim 1. The inert gas used in amended claim 1 is not taught or suggested by the carbon dioxide used in the cited references.

In addition, in Azuma and Yamaki et al, the carbon dioxide or the carbonic acid gas are used as a plasticizer to be blended into a thermoplastic resin. A plasticizer is an additive that softens the base materials (usually a plastic or a concrete mix) to which it is added. Plasticizers for plastics are often based on esters of polycarboxylic acids with linear or branched aliphatic alcohols of moderate chain length. This definition could be found in a common dictionary or encyclopedic website such as <http://en.wikipedia.org/wiki/Plasticizer>. However, the inert gas used in the present invention is not a plasticizer.

For at least the above reasons, from the viewpoint of one of ordinary skill having common knowledge in the art, the cited references do not teach or suggest that an inert gas could be used for forming a light guide plate. Furthermore, that the inert gas used in the present invention provides a light guide plate having high transparency, while the carbon dioxide used in Azuma or Yamaki et al is liable to produce yellowing in the formed light guide plate product. That is, the method of amended claim 1 produces new and unexpected results.

In summary, it would have been unobvious for one of ordinary skill in the art to employ the method recited in amended claim 1 to make a light guide plate. Applicant submits that amended claim 1 is novel, unobvious and patentable over Azuma and Yamaki et al, whether taken alone or in combination, under both 35 U.S.C. 102 and 35 U.S.C. 103.

Claims 11 and 12 depend directly and indirectly from amended claim 1. Therefore, claims 11 and 12 should also be novel, unobvious and

Appl. No. 10/707,361
Amdt. Dated June 8, 2006
Reply to Office Action of March 8, 2006

patentable over the cited references.

Amended claim 14 recites limitations similar to those recited in amended claim 1. Applicant refers to and relies on the above assertions regarding patentability of amended claim 1. For similar reasons, it is submitted that amended claim 14 is novel, unobvious and patentable over Azuma and Yamaki et al, whether taken alone or in combination, under both 35 U.S.C. 102 and 35 U.S.C. 103.

Claim 15 depends from amended claim 14. Therefore, Applicant submits that claim 15 should also be novel, unobvious and patentable over the cited references.

5. Claim Rejections under 35 U.S.C. 103(a)

Claims 2-10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azuma.

In response, Applicant has amended claims 2-3 and 8 in order to clarify the subject matter, patentably distinguish the invention, and correct certain informalities. Applicant refers to and relies on the above assertions regarding patentability of amended claim 1. Claims 2-10 and 13 depend directly or indirectly from amended claim 1. Therefore, Applicant submits that claims 2-10 and 13 should also be novel, unobvious and patentable over the cited references.

6. Claim Rejections under 35 U.S.C. 102(b)

Claims 1, 11, 12, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamaki et al (US 6,146,577).

In response, Applicant has amended claims 1, 12 and 14 in order to clarify the subject matter, patentably distinguish the invention, and correct

Appl. No. 10/707,361
Amdt. Dated June 8, 2006
Reply to Office Action of March 8, 2006

certain informalities. Applicant submits that the claims 1, 11, 12, 14 and 15 are now novel and unobvious over the cited reference, as follows:

Similar to Azuma, Yamaki et al disclose carbon dioxide being dissolved into a resin during or after plasticization in a cylinder of a molding machine (see column 6, lines 36-50). However, as stated by Examiner, Yamaki et al do not disclose or suggest that the gas mixed in the molten methacrylate resin can be one of the noble gases. Specifically, Yamaki et al do not disclose or suggest "mixing an inert gas into the molten resin material, the inert gas being selected from group consisting of noble gases and nitrogen gas." Therefore, Applicant submits that amended claim 1 is novel over Yamaki et al.

In addition, Applicant submits amended claim 1 is unobvious over Yamaki et al and the other cited reference (Azuma), whether taken alone or in combination. Applicant refers to and relies on the above assertions regarding patentability of amended claim 1. For similar reasons, it is submitted that neither of the cited references, nor indeed their combination, provides any suggestion or motivation to employ an inert gas (selected from noble gases and nitrogen gas) for making a light guide plate. That is, amended claim 1 is novel, unobvious and patentable over Yamaki et al and Azuma, whether taken alone or in combination, under both 35 U.S.C. 102 and 35 U.S.C. 103.

Claims 11 and 12 depend directly and indirectly from amended claim 1. Therefore, Applicant submits that claims 11 and 12 should also be novel, unobvious and patentable over the cited references.

Amended claim 14 recites limitations similar to those recited in amended claim 1. Applicant refers to and relies on the above assertions regarding patentability of amended claim 1. For similar reasons, it is submitted that amended claim 14 is novel, unobvious and patentable over Yamaki et al

Appl. No. 10/707,361
Amdt. Dated June 8, 2006
Reply to Office Action of March 8, 2006

and Azuma, whether taken alone or in combination, under both 35 U.S.C. 102 and 35 U.S.C. 103.

Claim 15 depends from amended claim 14. Therefore, Applicant submits that claim 15 should also be novel, unobvious and patentable over the cited references.

7. Claim Rejections under 35 U.S.C. 103(a)

Claims 2-10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaki et al.

In response, Applicant has amended claims 2-3 and 8 in order to clarify the subject matter, patentably distinguish the invention, and correct certain informalities. Applicant refers to and relies on the above assertions regarding patentability of amended claim 1 over both Yamaki et al and Azuma. Claims 2-10 and 13 depend directly or indirectly from amended claim 1. Therefore, Applicant submits that claims 2-10 and 13 should also be novel, unobvious and patentable over the cited references.

8. Claim Rejections under 35 U.S.C. 102(g) and/or 35 U.S.C. 102(f)

It is stated that claims 1-15 are directed to the same invention as that of claims of commonly assigned 10/731,617. The issue of priority under 35 U.S.C. 102(g) and possibly 35 U.S.C. 102(f) of this single invention must be resolved.

In response, Applicant advises that the copending Application No. 10/731,617 has now been abandoned. Therefore, the rejections are now moot.

In view of the foregoing, the present application as claimed in the

Appl. No. 10/707,361
Amdt. Dated June 8, 2006
Reply to Office Action of March 8, 2006

pending claims is considered to be in a condition for allowance, and an action to such effect is earnestly solicited.

Respectfully submitted,
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